Don Wilson
Vice President and
General Manager

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December 7, 2015

United States, et.al. v. Valero, et.al.
Civil Action No. SA-05-CA-0569
August 8, 2015 Flaring Event, Final Report

Director
Air Enforcement Division (2242A)
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

To Whom It May Concern:

Paragraph 242 of the Consent Decree between the United States and Valero requires the submission of a report within 60 days following the end of a flaring incident. The attached report fulfills this obligation for an August 8, 2015 flaring incident that occurred at the Valero Benicia Refinery.

Please contact Ms. Sky Bellanca at (707) 745-7749 if you have any questions regarding this report.

Sincerely,

Donald C. Wilson
Vice President & General Manager

DCW/KSB/tac

Enclosure

cc: Director, Air Division (AIR-1), Jordan.Deborah@EPA.gov
Attn: Chief, Air Enforcement Office
U. S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
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ecc: pdf copy
Clare Sullivan Matrix New World Engineering Inc. - (csullivan@matrixneworld.com)
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Root Cause Failure Analysis

Impact Incident Number: **157724**

The information contained below satisfies the requirements of the Valero Consent Decree XII.D.242

Refinery: **Benicia**
Incident Type: **Hydrocarbon Flaring**
Combustion Source: **North and South Flare**

Due Date: **12/7/2015**
Final

Previous Dates and Reports: **7-Oct-15**

(1.) The date and time that the Incident started and ended:

Times:	1	2	3	4	5	6	7
Start/End Date:	**8/8/2015**						
From:	**6:48 AM**						
To:	**8:52 AM**						
Total (Hrs):	**2.1**						

After submittal of the Compliance Plan for Flaring Devices specified in 237, was the Incident attributable to the combustion of a stream(s) of Continuous or Intermittent Routinely-Generated Fuel Gases covered in the plan?

NA (Yes/No/NA) If yes, it is not necessary to complete Sections 2-9.

H_2S content, ppm **729** If the flared gas contains less than 162 ppm H2S, it is not necessary to complete Sections 2-9.

(2.) Estimate of the quantity of SO2 that was emitted:

Average Flowrate, dscfh (FR)	(FR)	**2,858,021**	Std. Temp: 68 deg.
Total Duration, hours	(TD)	**2.1**	
Avg. Vol. Frac. H_2S, scf/scf	($ConcH_2S$)	**0.000729**	
Tons of SO_2 =		**0.4**	

Tons of SO2 = [FR][TD][$ConcH_2S$][8.31 x 10^{-5}]
Tons of SO2 = [2858021][2.1][0.000729][8.31 x 10-5]

Include explanation of basis for any estimates of missing data points (257):
The average flow rate and concentration of H2S are based on flare flow meter values and lab analysis of H2S content in the flare gas samples, which are taken approximately every three hours during a flare event.

(3.) The steps taken to limit the duration and/or quantity of SO_2 emissions associated with the Incident:

A. Control House monitoring to maintain stable operations.
B. Orderly shutdown and depressuring operations followed written procedures. These procedures are intended to minimize flaring and ensure the safety of personnel and equipment.

Did the incident result from temporarily bypassing a flare gas recovery system for safety or maintenance reasons?

No (Yes/No) If yes, it is not necessary to complete sections 3 or 5-9.

Root Cause Failure Analysis

Impact Incident Number: **157724**

(4.) Detailed analysis that set forth the Root Cause of the Incident, to the extent determinable:

The flaring event was due to an unplanned gas turbine (GT-401) trip due to power-related issues and subsequent unexpected emergency shutdown of the Hydrocracker Unit (HCU).

The root cause of the flaring event was failure of GT-401 redundant low voltage power supply to Trioconex controls. Loss of the Triconex control power supply A (the designated primary power supply) may have been related to failure of power supply B (the designated secondary power supply), creating a temporary over-voltage condition on power supply A. Loss of power supply B was due to transistor failure: the transistor failed as a result from running at temperature exceeding design due to fouling.

Loss of low voltage power supply to controls caused the GT-401 fuel gas and steam valves to fail closed, which initiated a trip on GT-401. The GT-401 trip caused the unexpected emergency shutdown of the HCU.

Was the incident attributable to the SU/SD of a unit in which a similar Incident was previously analyzed for corrective action?

No (Yes/No) If yes, it is not necessary to complete Sections 5-9 if the corrective action is identified.

Has a commitment been made in the Compliance Plan for Flaring Devices to process this stream in a planned flare gas recovery system that would have reduced the SO2 emissions for this incident to less than 500 lbs in a 24 hour period?

No (Yes/No) If yes, it is not necessary to complete Sections 5-9.

(5.) Analysis of the measures, if any, that are reasonably available to reduce the likelihood of a recurrence of the Incident including cost and effectiveness of changes in design, operation, and maintenance.

A) Replace power supplies A and B

B) Review the design of low voltage power supply to GT-401 controls and field verify that wiring is per design (to identify any connectivity issues between the primary and secondary power supplies).

C) Review the existing critical power supply preventative maintenance program and modify the program, as necessary, to minimize fouling while in service.

(6.) Description of corrective action(s) or explanation of why corrective action(s) are not required:

Is corrective action required? **Yes** (Yes/No)

A) Replaced power supplies A and B

B) Added the following to the turnaround work scope: field verify acceptable wiring design and verify/correct any connectivity issues between primary and secondary low voltage power supplies to GT-401 controls during the next scheduled turnaround.

C) Repaired the PLC cabinet doors and replaced filters to improve air filtration in the PLC building (to minimize transistor fouling). The existing critical power supply preventative maintenance program will be modified as necessary to minimize the potential for future fouling.

If corrective action(s) are not complete, what is the proposed schedule?

Start Date: _____ Completion Date: _____

(7.) Stipulated Penalty Analysis: **NOT APPLICABLE**

(8.) The investigation of causes and/or possible corrective actions still are underway 60 days after the end of the incident so an extension is being requested (up to 60 days typically). Input a date only for initial and follow-up reports.

No (Yes/No) The followup report shall be submitted by: _____

Alternatively, HC Flaring RCFA reports may be submitted as part of Semi-annual Progress Reports (243).

(9.) Is(are) the completion of the implementation of corrective action(s) finalized at this time?

No (Yes/No/NA) If no, a corrective action completion report is required within 30 days of completion.

Certification (261)

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and that I have made a diligent inquiry of those individuals immediately responsible for obtaining the information and that to the best of my knowledge and belief, the information submitted herewith is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Signed: Donald C. Wilson Date: 12-3-15

Name: **Donald C. Wilson** Title: **Vice President & General Manager**

Submit copies to EPA, the applicable EPA regional office (242), and the applicable state agency (376).

NOTE: Prior to the NSPS compliance date for flaring devices, a single RCFA report may be prepared for HC Flaring Incidents with root causes that routinely reoccur provided EPA and the appropriate Plaintiff-Intervener have been given prior notification. (244)